

# AFTER



*Over grazing and improper grazing techniques adjacent to Cascade Reservoir (right) have been replaced with proper grazing and reestablishment of riparian vegetation (left).*



# BEFORE

## **Compendium of Best Management Practices To Control Polluted Runoff**

A SOURCE BOOK

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## APPENDIX A

# Glossary

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**Access Restriction, Forest Roads:** Wherever possible, completely close the road to travel and restrict access by unauthorized persons by using gates or other barriers. Evaluate the future need for a road and close roads that will not be needed. Leave closed roads and drainage channels in a stable condition to withstand storms.

**Access Road, Agriculture:** A travel-way for equipment and vehicles constructed as part of a conservation plan to provide a fixed route for vehicular travel for resource activities involving the management of timber, livestock, agriculture, wildlife habitat, and other conservation enterprises while protecting the soil, water, fish, wildlife, and other adjacent natural resources.

**Access Road, Forest:** A temporary or permanent road over which timber is transported from a loading site to a public road. Also known as a haul road.

**Adopt-A-Stream Programs:** Volunteer programs, in which participants “adopt”

a stream, creek, or river to study, clean up, monitor, protect, and restore.

**Adsorbents in Drain Inlets:** Adsorbent material placed in drain inlets in a manner that will allow sufficient contact between the adsorbent and the storm water will remove much of the oil and grease load of runoff.

**Aeration of Reservoir Waters and Releases:** The practice of reservoir aeration relies on atmospheric air, compressed air, or liquid oxygen to increase concentrations of dissolved oxygen in reservoir waters before they pass through dams.

**Alley Cropping:** Trees or shrubs planted in a set or series of single or multiple rows with agronomic, horticultural crops or forages produced in the alleys between the rows of woody plants.

**Alternative On-Site Treatment Systems, Wastewater:** Alternatives to septic systems for on-site wastewater treatment such as mound systems, intermittent sand filters, re-circulating

sand filters, and evapotranspiration and evapotranspiration/absorption systems.

**Anoxic Limestone Drains (ALD):** An ALD is simply a quantity of high quality limestone, sealed in plastic to maintain anaerobic conditions, typically buried in a trench over which the drainage water is passed. The limestone reacts with the free protons to impart bicarbonate-buffering capacity to the ALD.

**Avoid Sensitive Areas:** Locations near critically erodible or environmentally sensitive areas, including natural drainage ways, lakes, ponds, springs, high water tables, floodplains, and wetlands, are avoided in the siting, design, and construction of a project.

**Barb or Partial Drop Structure:** A barb or partial drop structure decreases stream gradient, dissipates stream energy, and redirects stream flow.

**Bench Slopes:** Large steps in a slope face useful for providing favorable sites for

establishing vegetation and controlling runoff. Benches can help stabilize large excessively steep slopes in highly cohesive materials. This method is most applicable in newly constructed areas.

**Bioengineering:** The installation of living plant material as a main structural component in controlling problems of land instability where erosion and sedimentation are occurring. Soil bioengineering provides an array of practices that are effective for both prevention and mitigation of problems. This applied technology combines mechanical, biological, and ecological principles to construct protective systems that prevent slope failure and erosion.

**Bioretention:** Bioretention areas are landscaping features adapted to provide on-site treatment of storm water runoff. They are commonly located in parking lot islands or within small pockets of residential land uses.

**Biotechnical Stabilization:** Biotechnical stabilization involves using live layers of brush imbedded in the ground to control or prevent surficial erosion and mass failure of slopes.

**Boat Cleaning:** This practice minimizes the use and release of potentially harmful cleaners and bottom paints to marina and surface waters.

**Boat Operation:** This practice prohibits boat operation in areas are not suitable for boat traffic due to their shallow water depth, ecological importance, and sensitivity to disruption of the types of habitats in the area.

Excluding boats from such areas will minimize direct habitat destruction. Establishing no-wake zones will minimize the indirect impacts of increased turbidity (e.g., decreased light availability).

**Branchpacking:** A bioengineering technique that consists of alternating layers of live branch cuttings and compacted backfill to repair small localized slumps and holes in slopes.

**Broad-based Dip Construction:** A broad-based dip is a gentle roll in the centerline profile of a road that is designed to be a relatively permanent and self-maintaining water diversion structure and can be traversed by any vehicle.

**Brushlayering:** A bioengineering technique that consists of placing live branch cuttings in small benches excavated into the slope. Brushlayering is somewhat similar to live fascine systems because both involve the cutting and placing live branch cuttings on slopes. The two techniques differ principally in the orientation of the branches and the depth to which they are placed in the slope.

**Brush Barriers:** Brush barriers are slash materials piled at the toe slope of a road or at the outlets of culverts, turnouts, dips, and water bars. Brush barriers should be installed at the toe of fills if the fills are located within 150 feet of a defined stream channel.

**Brush/Sediment Barriers:** Temporary sediment barriers constructed of limbs, weeds, vines, root mat, soil, rock, or other cleared

materials piled together to form a berm, and located across or at the toe of a slope susceptible to sheet and rill erosion.

**Brush/Vegetation Management:** Managing and manipulating stands of brush (and weeds) on range, pasture, and recreation and wildlife areas by mechanical, chemical, or biological means or by prescribed burning. (Includes reducing excess brush (and weeds) to restore the natural plant community balance and manipulating stands of undesirable plants through selective and patterned treatments to meet the specific needs of the land and objectives of the land user.)

**Brush Mattressing:** A bioengineering technique that involves digging a slight depression on the bank and creating a mat or mattress from woven wire or single strands of wire and live, freshly cut branches from sprouting trees or shrubs.

**Buffer Strips/Zones:** Strips of erosion-resistant vegetation between a waterway, or other natural area, and an area of more intensive use. Buffer strip areas decrease the velocity of storm water runoff, which helps to prevent soil erosion.

**Building and Grounds Maintenance:** Preventing or reducing the discharge of pollutants from building and grounds maintenance, by washing and cleaning up with as little water as possible, preventing and cleaning up spills immediately, keeping debris from entering the storm drains, and maintaining the storm water collection system.

**Cable Yarding Practices:** Using cabling systems or other systems when groundskidding exposes excess mineral soils and induces erosion and sedimentation. Avoid cable yarding in or across watercourses. Yard logs uphill rather than downhill. Full log suspension is preferred over partial suspension to minimize ground disturbances. Downhill yarding may be preferred in cases where it results in less roads.

**Catch Basins:** Catch basins with flow restrictors may be used to prevent large pulses of storm water from entering surface waters at one time. They provide some settling capacity because the bottom of the structure is typically lowered 2 to 4 feet below the outlet pipe. Above- and below-ground storage is used to hold runoff until the receiving pipe can handle the flow.

**Catch Basin with Sand Filter:** A catch basin with sand filter consists of a sedimentation chamber and a chamber filled with sand. The sedimentation chamber removes coarse particles, helps to prevent clogging of the filter medium, and provides sheet flow into the filtration chamber. The sand chamber filters smaller-sized pollutants.

**Channel Stabilization:** Channel stabilization utilizes hydraulic structures to stabilize stream channels, as well as to control stream sediment load and transport.

**Channel Vegetation:** Establishing and maintaining adequate plants on channel banks, berms, spoil, and associated areas to

stabilize channel banks and adjacent areas, reduce erosion and sedimentation, and maintain or enhance the quality of the environment, including visual aspects and fish and wildlife habitat.

**Check Dam:** A small porous or nonporous dam constructed across a drainageway to reduce channel erosion by restricting flow velocity. Check dams should not be used in live streams. They can serve as emergency or temporary practices in small eroding channels that will be filled or permanently stabilized at a later date. They can also serve as permanent structures that will sediment in over time in gullies. This usage is more common in range and agricultural settings.

**Check Dam Systems:** Check dam systems provide beneficial sediment-reduction functions by trapping sediment behind the dams.

**Chemical and Filtration Treatment Systems:** Chemical treatment of wastewater is the addition of certain chemicals that cause small solid particles to adhere together to form larger particles that settle out or can be filtered. Filtration systems remove suspended solids by forcing the liquid through a medium, such as folded paper in a cartridge filter.

**Chemical Management:** Practices used in applying, mixing, loading, and disposing of pesticides and fertilizers.

**Chemical Treatment:** A process for ameliorating acid mine drainage that involves capturing

the discharge and treating it to neutralize, remove metals from, and soften the water.

**Chiseling and Subsoiling:** Loosening the soil, without inverting and with a minimum of mixing of the surface soil, to shatter restrictive layers below normal plow depth that inhibit water movement or root development.

**Closure of Waste Impoundments:** The closure of waste impoundments (treatment lagoons and waste storage ponds), which are no longer used for their intended purpose, in an environmentally safe manner.

**Coffer Dam:** A temporary structure built into a waterway to contain or divert movement of water and to provide a reasonable dry construction area.

**Community Cleanups:** Special trash collection events along local waterways, on beaches and around storm drains to remove litter and debris.

**Community Hotlines:** Community hotlines provide a means for concerned citizens and agencies to contact the appropriate authority when they see water quality problems. A hotline can be a toll-free telephone number or an electronic form linked directly to a utility or government agency, such as the water quality control board.

**Compaction:** A mechanical method of increasing the density of soil to reduce settling and improve resistance to erosion.

**Composting Facility:** A facility for the biological stabilization of organic waste material.

**Comprehensive Planning and Zoning:** Zoning is the division of a municipality or county into districts for the purpose of regulating land use. Usually defined on a map, the allowable uses within each zone are described in an official document, such as a zoning ordinance. Zoning is enacted for a variety of reasons, including preservation of environmentally sensitive areas and areas necessary to maintain the environmental integrity of an area.

**Conservation Cover:** Establishing and maintaining perennial vegetative cover to protect soil and water resources on land retired from agricultural production.

**Conservation Crop Rotation:** Growing crops in a recurring sequence on the same field.

**Conservation Cropping Sequence:** An adapted sequence of crops designed to provide adequate organic residue for maintenance or improvement of soil tilth.

**Conservation Tillage:** Any tillage or planting system that maintains at least 30 percent of the soil surface covered by residue after planting to reduce soil erosion by water; or, where soil erosion by wind is the primary concern, maintains at least 1,000 pounds of flat, small-grain residue equivalent on the surface during the critical erosion period.

**Constructed Systems or Devices:** Constructed devices or retrofits to existing machinery or operations that can detect equipment failures or leaks, contain contaminants at the source, or catch spilled chemicals.

**Constructed Wetlands:** Constructed wetlands are a subset of created wetlands designed and developed specifically for water treatment. They have been further defined as engineered systems designed to simulate natural wetlands to exploit the water purification functional value for human use and benefits.

**Construction and Operating Standards:** Requirements that limit impervious surfaces, encourage open space, locate high-risk activities away from drinking water sources, or encourage cluster development to reduce runoff.

**Construction Road/Entrance Stabilization:** Stabilizing and maintaining access roads, subdivision roads, parking areas, and other on-site vehicle transportation routes immediately after grading to prevent soil erosion and control dust.

**Construction Site Management:** The application of controls to the entire construction site during the construction phase of a project to minimize any adverse environmental impacts.

**Contour Buffer Strips:** Narrow strips of permanent, herbaceous vegetative cover established across the slope and alternated

down the slope with parallel, wider cropped strips.

**Contour Farming:** Farming sloping land in such a way that preparing land, planting, and cultivating are done on the contour. This includes following established grades of terraces or diversions.

**Contour Orchard and Other Fruit Areas:** Planting orchards, vineyards, or small fruits so that all cultural operations are done on the contour.

**Contour Stripcropping:** Growing crops in a systematic arrangement of strips or bands on the contour to reduce water erosion.

**Contractor Education:** Education and certification for key on-site employees who are responsible for implementing construction site practices to protect water quality.

**Controlled Drainage:** Control of surface and subsurface water through use of drainage facilities and water control structures.

**Cover and Green Manure Crop:** A crop of close-growing grasses, legumes, or small grains grown primarily for seasonal protection and soil improvement. The crop usually is grown for one year or less, except where there is permanent cover, such as in orchards.

**Covering:** The partial or total physical enclosure of stockpiled or stored material, loading/unloading areas, or processing operations. Covering is applicable to mining sources such as tailings piles and surface

impoundments used for waste storage and disposal. Drainage from a covering is captured and directed around potential contamination areas.

**Critical Area Planting:** Planting vegetation, such as trees, shrubs, vines, grasses, or legumes, on highly erodible or critically eroding areas.

**Crop Residue Use:** Using plant residues to protect cultivated fields during critical erosion periods.

**Culverts:** Corrugated metal pipes used for runoff collection and conveyance.

**Dam, Diversion:** A structure built to divert all or part of the water from a waterway or a stream.

**Dedicated Slipside Systems:** Dedicated slipside systems provide continuous wastewater collection at a slip. Slipside pumpout should be provided to live-aboard vessels. The remainder of a marina can still be served by either marina-wide or mobile pumpout systems.

**Deep Tillage:** Performing tillage operations below the normal tillage depth to modify the physical or chemical properties of a soil.

**Deferred Grazing:** Postponing grazing or resting grazing land for prescribed period.

**Delayed Seed Bed Preparation:** Any cropping system in which all of the crop residue and volunteer vegetation are

maintained on the soil surface until approximately three weeks before the succeeding crop is planted, thus shortening the bare seedbed period on fields during critical erosion periods.

**Dikes and Berms:** An embankment constructed of earth or other suitable materials to protect land against overflow or to regulate water.

**Ditch and Turnout Construction:** The use of ditches where necessary to discharge water into vegetated areas through the use of turnouts. Ditches are constructed wide and gently sloping, especially in areas with highly erodible soils. Ditches should be stabilized with rock and/or vegetation and outfalls protected with rock, brush barriers, live vegetation, or other means.

**Diversion Channel:** A channel constructed across the slope with a supporting ridge on the lower side.

**Diversion Dike/Ditch:** Diversion dikes/ditches are used whenever it is necessary to dispose of concentrated surface water without causing erosion. Diversions should be used in conjunction with a silt fence or sediment pond.

**Downstream Effects Evaluation:** Impacts from the operation of dams to surface water quality and aquatic and riparian habitat are assessed and the potential for improvement evaluated. Additionally, new upstream and downstream impacts to surface water quality

and aquatic and riparian habitat are also considered in the assessment.

**Drainage Structure Maintenance:** The inspection and maintenance including repair, replacement and clearing of pipes, culverts, underdrains, horizontal drains, and other elements of drainage systems. It also includes removal of silt, debris, and overgrown vegetation to maintain the flood control capacity of drainage ditches.

**Drainfields:** A drainage system constructed of rock or rock and perforated pipe, used to drain water away from construction sites.

**Drop Structures:** Natural materials such as rocks and trees that are put in for stream stabilization, controlling water velocities, and creating fish habitat. Placement of a drop structure perpendicular to stream flow will decrease the stream gradient, dissipate stream energy, and decrease stream velocity through an increase in water surface elevation immediately above the structure.

**Dry Weather Outfall Screening:** Detecting illicit discharges to the storm drain system through visual screening and water sampling from manholes and outfalls during dry weather.

**Dust Control:** Watering, mulching, sprigging, or applying geotextile materials to a construction area to prevent soil loss as dust.

**Equipment Operation and Maintenance:** Proper maintenance of vehicles and

household, farm, construction, and industrial equipment.

**Emergency Response Planning:**

Planning for unforeseen circumstances by identifying potential threats and formulating response scenarios.

**Employee Training:** Training employees regarding practices and inspections to identify potential difficulties before they become major problems.

**Erosion Controls:** Erosion controls are preventive practices that include limiting disturbance to land and vegetation, scheduling and phasing construction. They also include temporary cover practices, mulches, matts and blankets, and permanent vegetation establishment.

**Erosion Control Blanket:** Matting made of natural or synthetic materials that are used to stabilize soil.

**Extended Detention Basin:** Extended detention ponds temporarily detain a portion of urban runoff for up to 24 hours after a storm, using a fixed orifice to regulate outflow at a specified rate, allowing solids and associated pollutants the required time to settle out. The ponds are normally “dry” between storm events and do not have any permanent standing water.

**Evaporation Pond:** A pond designed for containing, retaining, and disposing of storm water runoff by way of evaporation.

**Fencing:** Enclosing or dividing an area of land with a suitable permanent structure that acts as a barrier to livestock, big game, or people (does not include temporary fences).

**Field Border:** A strip of perennial vegetation established at the edge of a field by planting or by converting it from trees to herbaceous vegetation or shrubs.

**Field Strip-Cropping:** Growing crops in a systematic arrangement of strips or bands across the general slope (not on the contour) to reduce water erosion.

**Field Windbreak:** A strip of permanent vegetation established at the edge or around the perimeter of a field.

**Filter Strip:** A strip or area of vegetation for removing sediment, organic matter, and other pollutants from runoff and wastewater.

**Firebreak:** A strip of bare land or vegetation that retards fire.

**Fireline Practices:** Practices for all bladed firelines, for prescribed fire and wildfire, including plowing on contour or stabilizing with water bars and/or other appropriate techniques if needed to control excessive sedimentation or erosion of the fireline. Wildfire suppression and rehabilitation decisions should consider possible pollution of watercourses, while recognizing the safety and operational priorities of fighting wildfires.

**Fish Passage:** Modification or removal of barriers that restrict or prevent movement or migration of fish.

**Fish Waste Practices:** Proper disposal of fish waste through education and provision of adequate and convenient disposal facilities.

**Fixed-Point Systems:** Fixed-point collection systems include one or more centrally located sewage pumpout station. These stations are generally located at the end of a pier, often on a fueling pier so that fueling and pumpout operations can be combined.

**Flexible Liners:** Flexible channel protection uses a flexible material as a lining to stabilize and prevent erosion in open drainage channels.

**Flow Augmentation:** A flushing flow is a high-magnitude, short-duration release from an impoundment for the purpose of maintaining channel capacity and the quality of instream habitat. Minimum flows are needed to keep streambeds wetted to an acceptable depth to support desired fish and wildlife. Seasonal discharge limits can be established to prevent excessive, damaging rates of flow release. Limits can also be placed on the rate of change of flow and on the stage of the river (as measured at a point downstream of a dam facility) to further protect against damage to instream and riparian habitat.

**Flow Restrictors:** Hydraulic structures to stabilize stream channels, as well as to control stream sediment load and transport.

**Forage Harvest Management:** The timely cutting and removal of forages from the field as hay, green-chop, or ensilage.

**Fueling Station Practices:** The location and design of the fueling stations to allow for booms to be deployed to surround a fuel spill, development of a spill contingency plan for fuel storage and dispensation areas, and design of fueling stations with spill containment equipment.

**Gabions:** Rock-filled wire baskets for use in retaining walls or drainage stabilization.

### **General Planting and Seeding**

**Specifications:** Information applicable to revegetating disturbed lands.

**Geosynthetics/Geotextiles:** A planar product manufactured from a polymeric material used with soil, rock or other geotechnical-related materials as an integral part of a civil engineering project, structure, or system.

**Grade Stabilization Structure:** A structure designed to reduce channel grade in natural or constructed watercourses to prevent erosion of a channel that results from excessive grade in the channel bed or artificially increased channel flows. This practice can prevent headcutting or stabilize gully erosion. Grade stabilization structures may be vertical drop structures, concrete or riprap chutes, gabions, or pipe drop structures.

**Grass Buffer Strips:** A gently sloping area of vegetated cover that runoff flows through

before entering a stream, storm sewer, or other conveyance.

**Grassed Swales:** Grassed swales are low-gradient conveyance channels that may be used in place of buried storm drains. To effectively remove pollutants, the swales should have relatively low slope and adequate length and should be planted with erosion-resistant vegetation.

**Grassed Waterway:** A natural or constructed channel that is shaped or graded to required dimensions and established in suitable vegetation for the stable conveyance of runoff.

**Grasses and Legumes in Rotation:** Establishing grasses and legumes or a mixture of them and maintaining the stand for a definite number of years as part of a conservation cropping system.

**Grass-Lined Channel:** A swale vegetated with grass that is dry except following storms and serves to convey specified concentrated storm water runoff volumes, without resulting in erosion, to disposal locations. Typical uses include roadside swales, outlets for runoff diversions, site storm water routing, and drainage of low areas.

**Grazing Land Mechanical Treatment:** Modifying physical soil and/or plant conditions with mechanical tools by treatments such as pitting, contour furrowing, and ripping or sub-soiling.

**Groins:** Structures that are built perpendicular to the shore and extend into the water.

Groins are generally constructed in series, referred to as a groin field, along the entire length of shore being protected. Groins trap sand in littoral drift and halt movement along beaches.

**Groundskidding Practices:** Practices to reduce the impacts of groundskidding including skidding uphill to log landings whenever possible, skidding with ends of logs raised to reduce rutting and gouging, skidding perpendicular to the slope (along the contour), and avoiding skidding on slopes greater than 40 percent.

Other practices include suspending groundskidding during wet periods, when excessive rutting and churning of the soil begins, or when runoff from skid trails is turbid and no longer infiltrates within a short distance from the skid trail. Installing waterbars or other erosion control and drainage devices, removing culverts, obliteration and revegetating serve to retire skid trails.

**Habitat Assessment:** Biological siting and design provisions for marinas based on the premise that marinas should not destroy important aquatic habitat, should not diminish the harvestability of organisms in adjacent habitats, and should accommodate the same biological uses (e.g., reproduction, migration) for which the source waters have been classified.

**Habitat Restoration and Maintenance, Dams:** Practices to manage or restore to

riparian habitat and water quality benefits. Examples of downstream aquatic habitat improvements include maintaining minimum instream flows, providing scouring flows when and where needed, providing alternative spawning areas or fish passage, protecting streambanks from erosion, and maintaining wetlands and riparian areas.

**Hardened Channels:** Channels with erosion-resistant linings of riprap, paving, or other structural material designed for the conveyance and safe disposal of excess water without erosion. Hardened channels replace grass-lined channels where conditions are unsuitable for the latter, such as steep slopes, prolonged flows, potential for traffic damage, erodible soils, or design velocity over 5 feet per second.

**Harvesting Practices, Timber:** Logging practices to protect the environment that include such things as falling trees away from watercourses, whenever possible; keeping logging debris from the channel, except where debris placement is specifically prescribed for fish or wildlife habitat; and immediately removing any tree accidentally felled in a waterway.

**Harvest Planning, Timber:** These practices consider potential water quality and habitat impacts when selecting the silviculture system as even-aged or uneven-aged, the yarding system, site preparation method, and any pesticides that will be used. Other practices include scheduling; minimizing soil disturbance and road damage; and providing

special protection to sensitive habitat areas, streamside management areas, steep slopes, high-erosion-hazard areas, landslide prone areas, and wetlands.

**Heavy Use Area Protection:** Protecting heavily used areas by establishing vegetative cover, by surfacing with suitable materials, or by installing needed structures.

**Holding Tanks:** Holding tanks act as underground detention basins that capture and hold storm water until it can receive treatment. There are generally two classes of tanks: first flush tanks and settling tanks.

**Household Hazardous Waste Collection:** Household hazardous waste collection programs are when specific days are usually designated as drop-off days for collection of household hazardous waste and are advertised through television, newspapers, flyers, and radio.

**Illegal Discharge Control:** Control of any discharge to the storm drain system that is not entirely composed of storm water except discharges pursuant to a NPDES permit; discharges resulting from fire fighting activities; and discharges further exempted by a specific agency, municipality, or governmental ordinance.

**Illicit Connection Control:** Control of any physical connection to a publicly maintained storm drain system composed of non-storm water that has not been permitted by the public entity responsible for the operation and maintenance of the system.

**Inactive Roads, Forest:** Closing and stabilizing temporary spur roads and seasonal roads to control and direct water away from the roadway and removing all temporary stream crossings, following completion of harvesting.

**Infiltration Basin/Trench:** Infiltration practices suitable for storm water treatment include basins and trenches. Infiltration practices reduce runoff by increasing ground water recharge. Prior to infiltration, runoff is stored temporarily at the surface, in the case of infiltration basins, or in subsurface stone-filled trenches.

**Inlet Protection:** Temporary devices constructed around storm drain inlets to improve the quality of water being discharged to inlets or catch basins by ponding sediment-laden runoff and increasing settling time. Examples include block and gravel protection, excavated protection, sod protection, and fabric protection.

**Instream Sediment Control:** Instream sediment control uses several structural practices for streambank protection and channel stabilization. Practices include structures such as revetments, grade control structures, and flow restrictors to control bank erosion processes and streambed degradation. Channel stabilization structures are used to trap sediment and decrease the sediment delivery to desired areas by altering the transport capacity of the stream and creating sediment storage areas.

**Integrative Ordinances:** Water-related codes and ordinances, such as erosion and sediment controls, storm water management, and prevention of illicit connections, implemented through the site planning process and verified through the review process, that reduce development impacts.

**Interceptor Trench:** Used to interrupt long slope faces on gentle slopes (less than 3:1) and to allow diversion and infiltration of collected runoff and retention of sediment.

**Irrigation Canal or Lateral:** A permanent irrigation canal or lateral constructed to convey water from the source of supply to one or more farms. The conservation objectives are to prevent erosion or degradation of water quality or damage to land, to make possible proper water use, and to convey water efficiently to minimize conveyance losses.

**Irrigation Field Ditch:** A permanent irrigation ditch constructed to convey water from the source of supply to a field or fields in a farm distribution system.

**Irrigation Land Leveling:** Reshaping the surface of land to be irrigated to planned grades.

**Irrigation Pit or Regulating Reservoir:** A small storage reservoir constructed to regulate or store a supply of water for irrigation including pits if part of the water is impounded above natural ground, provided that the depth of water above the ground surface, as measured at the spillway crest elevation,

does not exceed 3 feet. Also refers to reservoirs created by impounding structures and pits excavated below the ground surface for the short-period storage of either diverted surface water, water from pumped or flowing wells, or water from an irrigation delivery system.

**Irrigation Storage Reservoir:** An irrigation water storage structure made by constructing a dam designed to be filled during the season of low irrigation demand to provide water needed for irrigation during some other part of the year or in some future year.

**Irrigation System, Microirrigation:** A planned irrigation system in which all necessary facilities are installed for efficiently applying water directly to the root zone of plants by means of applicators (orifices, emitters, porous tubing, or perforated pipe) operated under low pressure.

**Irrigation System, Sprinkler:** A planned irrigation system in which all necessary facilities are installed for efficiently applying water by means of perforated pipes or nozzles operated under pressure.

**Irrigation System, Surface and Subsurface:** A planned irrigation system in which all necessary water control structures have been installed for efficient distribution of irrigation water by surface means, such as furrows, borders, contour levees, or contour ditches, or by subsurface means.

**Irrigation System, Tailwater Recovery:** A facility to collect, store, and transport

irrigation tailwater for reuse in the farm irrigation distribution system.

**Irrigation Water Conveyance:** A fixed lining of impervious material installed in an existing or newly constructed irrigation field ditch, irrigation canal, or lateral.

**Irrigation Water Management:** Determining and controlling the rate, amount, and timing of irrigation water in a planned and efficient manner.

**Joint Planting (Vegetated riprap):** A bioengineering technique that involves tamping live cuttings of plant material into soil between the joints or open spaces in rocks that have previously been placed on a slope.

**Land Smoothing:** Removing irregularities on the land surface using special equipment and involving operations classed as rough grading.

**Landing Practices:** Practices to reduce the impact of timber harvesting by providing landings no larger than necessary and including drainage and erosion control structures as necessary. Upon completion of harvest, landings are cleaned up, re-graded, and re-vegetated.

**Land Purchase and Development Rights:** The purchase of land and/or development rights to that land is the best way to control activities within sensitive areas. Communities may purchase land outright or obtain conservation easements, which are voluntary arrangements preventing a landowner from

performing certain activities or prohibiting certain kinds or densities of development.

**Land Use Prohibitions:** Source-specific and chemical-specific standards that remove contamination sources from water supply areas by prohibiting or limiting the storage or use of large supplies of dangerous substances in sensitive areas.

**Leak/Spill Prevention:** Spill prevention and control practices to stop the source of a spill, contain the spill, clean up the spill, dispose of contaminated materials, and train personnel to prevent and control future spills.

**Levee or Floodwall Setbacks:** Siting of levees and floodwalls prior to design and implementation of these projects. Proper siting of such structures can avoid several types of problems such as construction activities disturbing the physical integrity of adjacent riparian areas and/or wetlands. In addition, by setting back the structures (offsetting them from the streambank), the relationship between the channel and adjacent riparian areas can be preserved.

**Levee Protection:** Techniques used to protect, operate, and maintain levees. Evaluation of site-specific conditions and the use of best professional judgment are the best methods for selecting the proper levee protection and operation and maintenance plan. Methods to control vegetation include mowing, grazing, burning, and using chemicals.

**Level Spreader:** An outlet designed to convert concentrated runoff to sheet flow and

disperse it uniformly across a slope without causing erosion. This structure is particularly well-suited for returning natural sheet flows to exiting drainage that has been altered by development, especially for returning sheet flows to receiving ecosystems such as wetlands where dispersed flow may be important for maintain pre-existing hydrologic regimes.

**Limited Surface Disturbance:** Limiting the amount of bare soil to the minimum area required to conduct construction activities.

**Lined Waterway or Outlet:** A waterway or outlet having an erosion-resistant lining of concrete, stone, or other permanent material.

**Liquid Material Practices:** Practices for the proper storage, use, and disposal (and recycle when possible) of all liquid materials to prevent contact with storm water or discharge into storm drains and watercourses.

**Litter and Debris Control:** Controlling litter by encouraging businesses to keep the streets in front of their buildings free of litter; developing local ordinances restricting or prohibiting food establishments from using disposable food packaging, especially plastics, styrofoam, and other floatables; implementing “bottle bills” and mandatory recycling laws; providing technical and financial assistance for establishing and maintaining community waste collection programs; distributing public education materials on the benefits of recycling; and developing “user-friendly” ways for recycling, such as curbside pick-up,

voluntary container buy-back systems, and drop-off recycling centers.

**Live Cribwall:** A bioengineering technique that consists of a hollow, box-like interlocking arrangement of untreated log or timber members. The structure is filled with suitable backfill material and layers of live branch cuttings, which root inside the crib structure and extend into the slope. Once the live cuttings root and become established, the subsequent vegetation gradually takes over the structural functions of the wood members.

**Live Fascines:** A bioengineering techniques using long bundles of branch cuttings bound together into sausage-like structures. When cut from appropriate species and properly installed, they will root and immediately begin to stabilize slopes.

**Live Staking:** A bioengineering technique that involves the insertion and tamping of live, rootable vegetative cuttings into the ground.

**Log and Brush Check Dam:** A sediment trap built of logs and brush.

**Long-Term Inactive Roads, Forest:** Procedures that control erosion, block vehicular traffic and remove bridges, culverts, ditches and unstable fills, as required on roads not intended to be used again in the near future but likely to be used again at some point in the future.

**Low Impact Development (LID) Techniques:** The principles of LID guide where to place development and how to build it to minimize

negative consequences for aquatic ecosystems. This is a site design strategy with a goal of maintaining or replicating the pre-development hydrologic regime through the use of design techniques to create a functionally equivalent hydrologic landscape.

#### **Maintenance Facility Housekeeping**

**Practices:** Practices that reduce pollutants in storm water runoff by maintaining and washing equipment and machinery in confined areas specifically designed to control runoff; establishing fuel and vehicle maintenance staging areas located away from surface waters and all drainages leading to surface waters; and designing these areas to control runoff. Construction materials, refuse, garbage, sewage, debris, oil and other petroleum products, mineral salts, industrial chemicals, and topsoil are stored, covered, and isolated to prevent runoff of pollutants and contamination of ground water.

#### **Maintenance of Revegetated Areas:**

Protective practices, irrigation, fencing, fertilization and repair practices for areas being revegetated.

**Manure Transfer:** A manure conveyance system using structures, conduits, or equipment to transfer animal manure (bedding material, spilled feed, process and wash water, and other residues associated with animal production may be included) through a hopper or reception pit, a pump (if applicable), and a conduit to a manure storage/treatment facility.

**Marina Flushing:** Siting and design marinas to reduce potential for water quality impacts. Selection of a site that has favorable hydrographic characteristics and requires the least amount of modification can reduce potential impacts.

**Materials Management:** Practices to prevent or reduce the discharge of pollutants to the environment from outdoor loading or unloading, outdoor container storage areas, and material handling.

**Matting, Plastic:** Plastic matting can be used for dust and erosion control during construction on bare soils.

**Minimizing Directly Connected Impervious Areas (DCIAs):** Disconnecting impervious surfaces and directing storm water runoff to landscaped areas, grass buffer strips, and vegetated swales to slow down the rate of runoff, reduce runoff volumes, attenuate peak flows, and encourage filtering and infiltration of storm water.

**Mulching:** A protective blanket of straw or other plant residue, gravel, or synthetic material applied to the soil surface to minimize raindrop impact energy and runoff, foster vegetative establishment, reduce evaporation, insulate the soil, and suppress weed growth.

**Native Rock Retaining Wall:** A low wall made from locally available rock used to stabilize steep slopes.

**No-Wake Zones:** Zones established for reducing the erosion potential of boat wakes on streambanks and shorelines. Posted speed limits on waterways generally restrict the movement of recreational boating traffic to speeds that reduce wave heights associated with wakes.

**Nutrient Management:** Managing the amount, source, placement, form and timing of the application of nutrients and soil amendments to budget and supply nutrients for plant production; to properly utilize manure or organic by-products as a plant nutrient source; to minimize agricultural polluted runoff of surface and ground water resources; and to maintain or improve the physical, chemical, and biological condition of soil.

**Oil-Grit Separators:** Oil-grit separators may be used to treat water from small areas where other practices are infeasible and are applicable where activities contribute large loads of grease, oil, mud, sand, and trash to runoff.

**Oil-Water Separators:** Structures designed to remove petroleum products from storm water by collecting the oil on the surface of the water while allowing the water to flow through.

**Open Space Design:** Open space design, also known as conservation development or cluster development, is a better site design technique that concentrates dwelling units in a compact area in one portion of the development site in

exchange for providing open space and natural areas elsewhere on the site.

**Open-Top Box Culvert:** A temporary or permanent drainage collection system. Should be used in conjunction with a silt fence and riprap.

**Operational Procedures Adjustment, Dams:** Improving the quality of reservoir releases through adjustments in the operational procedures at dams. These include scheduling releases or the duration of shutoff periods, instituting procedures for the maintenance of minimum flows, and making seasonal adjustments in the pool levels and in the timing and variation of the rate of drawdown.

**Operation and Maintenance of Practices:** Regular inspection of control practices to maintain the effectiveness. This also includes routine maintenance performed on a regular basis to keep structural practices in good working order and aesthetically pleasing.

**Outdoor Loading/Unloading of Materials:** Practices to limit the exposure of material to rainfall, prevent storm water run-on, require regular equipment checks for leaks, and contain spills during transfer operations.

**Outdoor Process Equipment Operations and Maintenance:** Practices that reduce the amount of waste created, enclose or cover all or some of the equipment, provide secondary containment and train employees.

**Outdoor Storage of Raw Materials, Products, and By-Products:** Practices to

prevent or reduce the discharge of pollutants to storm water by enclosing or covering materials, installing secondary containment, and preventing storm water run-on.

**Outlet Protection:** A physical device composed of rock, grouted riprap, or concrete rubble that is placed at the outlet of a pipe to prevent scour of the soil caused by high pipe flow velocities, and to absorb flow energy to produce non-erosive velocities.

**Outlet Stabilization Structure:** A structure designed to control erosion at the outlet of a channel or conduit by reducing flow velocity and dissipating flow energy. This should be used where the discharge velocity of a structure exceeds the tolerances of the receiving channel or area.

**Parking Lot Cleaning:** This practice employs pavement cleaning practices such as sweeping on a regular basis to minimize pollutant export to receiving waters. These cleaning practices are designed to remove from road and parking lot surfaces sediment debris and other pollutants that are a potential source of pollution impacting urban waterways.

**Pasture and Hayland Planting:** Establishing and re-establishing long-term stands of adapted species of perennial, biannual, or reseeding forage plants. (Includes pasture and hayland renovation. Does not include grassed waterways, outlets, or cropland.)

**Paved Flume:** A small concrete-lined channel to convey water down a relatively steep slope without causing erosion. Flumes serve as

stable, permanent elements of a storm water system receiving drainage from above a relatively steep slope, typically conveyed by diversions, channels, or natural drainage ways.

**Perimeter Protection:** Perimeter protection (silt fences) consists of geotextile material stretched and attached to supporting posts that assists in sediment containment on a site by capturing most of the eroded soil particles (sediment) and slowing the runoff velocity to allow particle settling.

**Permanent Road Closure, Forest:** Road closure, including removal of drainage structures, treatment of roadway sections and obliteration (or recontouring), so that erosion and landslides are minimized on roads not intended to be used again.

**Pest Management:** Utilizing environmentally sensitive prevention, avoidance, monitoring, and suppression strategies to manage weeds, insects, diseases, animals, and other organisms (including invasive and non-invasive species), that directly or indirectly causes damage or annoyance.

**Petroleum Management Practices:** Practices that reduce the potential for water contamination from petroleum products. Practices include servicing equipment where spilled fuel and oil cannot reach watercourses; draining all petroleum products and radiator water into containers; disposing of wastes and containers in accordance with proper waste disposal procedures; and taking precautions to prevent leakage and spills.

**Pet Waste Management:** Proper cleanup and disposal of canine fecal material and discouragement of public feeding of waterfowl to control the adverse impacts of animal droppings.

**Pipeline:** Pipeline installed for conveying water for livestock or for recreation.

**Planned Grazing System:** A practice in which two or more grazing units are alternately rested and grazed in a planned sequence for a period of years, and rest periods may be throughout the year or during the growing season of key plants.

**Pole Culverts and/or Ditch Relief Culverts:** Culverts are placed at varying intervals in a road to safely conduct water from the ditch to the outside portion of the road.

**Pollution Prevention for Businesses:** Pollution prevention (P2) is the combination of activities that reduce or eliminate the amount of chemical contaminants at the source of production or prevent this waste from entering the environment or waste stream. This occurs when raw materials, water energy, and other resources are used more efficiently; when less harmful substances are substituted for hazardous ones; and when toxic substances are eliminated from the production process.

**Polyacrylamide (PAM) Erosion Control:** Erosion control through application of water-soluble anionic polyacrylamide. This practice is applied as part of a conservation management system to minimize or control irrigation-

induced soil erosion or to reduce wind and/or precipitation erosion.

**Pond:** A water impoundment made by constructing an embankment or by excavating a pit or dugout.

**Pond Seal and Liner:** A liner for a pond or waste impoundment to reduce seepage losses from ponds or waste impoundments for water conservation and environmental protection.

**Porous Pavement:** Porous pavement has a layer of porous top course covering an additional layer of gravel. A crushed stone-filled ground water recharge bed is typically installed beneath these top layers.

**Portable Systems, Sewage:** Portable/mobile systems are similar to fixed-point systems and in some situations may be used in their place at a fueling dock. The portable unit includes a pump and a small storage tank connected to the deck fitting on the vessel, and wastewater is pumped from the vessel's holding tank to the pumping unit's storage tank. When the storage tank is full, its contents are discharged into a municipal sewage system or a holding tank for removal by a septic tank pumpout service.

**Preharvest Notification:** Notification of the Idaho Department of Lands before commencing a forest practice or a conversion of forestlands.

**Prescribed Burning:** Applying fire to predetermined areas during conditions under

which the intensity and spread of the fire can be controlled.

**Prescribed Fire Practices:** Carefully planned burning to adhere to weather, time of year, and fuel conditions that will help achieve the desired results and minimize impacts on water quality.

**Prescribed Grazing:** Managing the controlled harvest of vegetation with grazing animals.

**Preservation of Existing Vegetation:** Designating areas for protection to minimize the potential of removing or injuring existing trees and other vegetation that serve as erosion controls.

**Product Storage, Use and Handling:** A source control to prevent the release of a chemical product by storing properly, and following the manufacturer's directions

**Proper Grazing Use:** Grazing at an intensity that will maintain enough cover to protect the soil and maintain or improve the quantity and quality of desirable vegetation.

**Proper Woodland Grazing:** Grazing wooded areas at an intensity that will maintain adequate cover for soil protection and maintain or improve the quantity and quality of trees and forage vegetation.

**Public Education:** Public education explains how businesses and households can protect water quality. Topics include environmentally responsible landscaping and lawn care, safe

use of chemicals, care of septic systems, and water conservation techniques.

**Public Health Regulations:** A local health district can help protect source waters by prohibiting or registering residential underground storage tanks, testing for leaks, instituting ground water monitoring and construction standards, restricting the number and size of septic systems allowed in an area; and prohibiting floor drains that discharge to ground water.

**Public Participation/Public Involvement:** Including the public in developing, implementing, and reviewing water quality management programs. Opportunities for members of the public to participate in program development and implementation include serving as citizen representatives on local panels, attending public hearings, working as citizen volunteers to educate other individuals about programs, assisting in program coordination with other pre-existing programs, and participating in volunteer monitoring efforts.

**Pumping Plant for Water Control:** A pumping facility installed to transfer water for a conservation need, including removing excess surface or ground water; filling ponds, ditches or wetlands; or pumping from wells, ponds, streams, and other sources. This water can provide a dependable water source or disposal facility for water management on wetlands or provide a water supply for such purposes as irrigation, recreation, livestock, or wildlife.

**Range Seeding:** Establishing adapted plants by seeding on native grazing land. (Range does not include pasture and hayland planting.)

**Reclamation, Mining:** Erosion and pollution from mine tailings are minimized through land reclamation. Tailings are modified and/or isolated from the surrounding environment. Modification happens through leaching, amendment applications, and biological treatment. Isolation involves separation of tailings from potential receiving waters and can include construction of barriers and depth isolation.

**Regeneration Practices:** Reforestation practices that protect water quality by distributing seedlings evenly across a site; hand planting highly erodible sites, steep slopes, and lands adjacent to stream channels; and operating planting machines along the contour to avoid ditch formation.

**Repair Leaking Sewer Lines:** The detection and elimination of sanitary sewer leaks into the storm drain system.

**Reregulation Weir:** Used to establish minimum flows for preservation of instream habitat. This device is installed in the streambed a short distance below a dam and captures hydropower releases. Flows through the weir can be regulated to produce the desired conditions of water level and flow velocities that are best for instream habitat.

**Residual Stocking:** Live trees left standing after the completion of harvesting to maintain

the continuous growing and harvesting of forest tree species.

**Residue Management:** Managing the amount, orientation, and distribution of crop and other plant residue on the soil surface year-round, while growing crops where the entire field surface is tilled prior to planting.

**Restrict Timing of Activity, Hydromodification:** Restricting the timing of hydromodification activities is targeted at reducing sediment yield and direct disturbance to fish during sensitive life stages such as spawning and rearing.

**Retention Pond:** A pond designed to capture and retain runoff from frequently occurring storms.

**Return Walls:** Return walls are used at either end of a vertical protective structure such as a bulkhead or revetment to prevent flanking. Flanking occurs when waves dislodge the substrate at both ends of the structure, resulting in very concentrated erosion and rapid loss of fastland. The walls should extend landward for a horizontal distance consistent with the local erosion rate and the design life of the structure.

**Revegetation of Disturbed Areas:** Planting practices that include using seed mixtures adapted to the site; using native woody plants planted in rows, cordons, or wattles on steep slopes; seeding during optimum periods for establishment, preferably just prior to fall rains; mulching as needed to hold seed, retard rainfall impact, and preserve soil moisture;

fertilizing according to site-specific conditions, and protecting seeded areas from grazing and vehicle damage until plants are well established.

**Revetment:** A type of vertical protective structure used for shoreline protection. One revetment design contains several layers of randomly shaped and randomly placed stones, protected with several layers of selected armor units or quarry stone. Sometimes gabions (stone-filled wire baskets) or interlocking blocks of pre-cast concrete are used in the construction of revetments.

**Rigid Channel Liner:** A non-erosive structure or surface placed in a channel or ditch. Rigid channel liners may be used to prevent erosion resulting from high velocities of water.

**Riparian Area Management:** Practices to manage or restore to riparian habitat and water quality benefits. Examples of downstream aquatic habitat improvements include maintaining minimum instream flows, providing scouring flows when and where needed, providing alternative spawning areas for fish passage, protecting streambanks from erosion, and maintaining wetlands and riparian areas.

**Riparian Forest Buffer:** An area of predominantly trees and/or shrubs located adjacent to and up gradient from watercourses or waterbodies.

**Riprap:** A layer of stone designed to protect and stabilize areas subject to erosion, slopes subject to seepage, or areas with poor soil

structure. Riprap is used on slopes where vegetation cannot be established, channel slopes and bottoms, storm water structure inlets and outlets, slope drains, streambanks, and shorelines.

**Road Outsloping and Grading:** Roadbeds are graded and outsloped to minimize water accumulation on road surfaces. This practice minimizes erosion and road failure potential. Outsloping involves grading the road so that it slopes downward from the toe of the road cut to the shoulder.

**Road Runoff Collection and Conveyance Practices:** Practices used to intercept and collect runoff while minimizing erosion and providing a conduit to convey the water to a desired runoff point. Examples include berms, diversion dikes, culverts, ditches, inlets spillways, and waterbars.

**Road Runoff Dispersion and Dissipation Practices:** Practices used to convert high velocity flows to lower velocity flows. Examples include benches, check dams, slope drains, and energy dissipators.

**Road Inspection:** Inspection of roads to determine the need for structural maintenance.

**Road Maintenance:** Conducting maintenance practices, when conditions warrant, including cleaning and replacing deteriorated structures and erosion controls, grading or seeding of road surfaces, and, in extreme cases, stabilizing slopes or removing road fills where necessary to maintain structural integrity.

**Road Sloping:** Selectively constructing or grading a road surface to direct surface water runoff in a desired direction, usually to the outside of the road.

**Road System Planning:** A group of practices designed to avoid sensitive areas, minimize total mileage, reduce grades, and minimize impacts to streams.

**Roadway Surface Water Deflectors:** A runoff interceptor built of treated wood and conveyor belt. The deflector is installed across the roadbed to convey surface water off the roadbed.

**Rolling Dips:** Structures that are designed into a road surface when it is being surveyed that are intended to divert water off the road surface. Rolling dips are the result of gradual grade changes along a length of road.

**Roof Runoff Structure:** A facility for controlling and disposing of runoff water from roofs.

**Runoff Controls:** Includes various practices designed to keep water from coming in contact with bare soil or controlling its velocity if it does. Included are drains for surface and subsurface water, dikes and swales placed across slopes to interrupt runoff, and roughness created on the surface to reduce velocity.

**Runoff Diversions:** Structures that channel upslope runoff away from erosion source areas, divert sediment-laden runoff to appropriate traps or stable outlets, or capture runoff before it leaves the site, diverting it to

locations where it can be used or released without erosion or flood damage. Diversions include graded surfaces to redirect sheet flow, diversion dikes or berms that force sheet flow around a protected area, and storm water conveyances (swales, channels, gutters, drains, sewers) that intercept, collect, and redirect runoff.

**Sand Filter:** Sand filters (also known as filtration basins) consist of layers of sand of varying grain sizes (grading from coarse sand to fine sands or peat), with an underlying gravel bed for infiltration or perforated underdrains for discharge of treated water.

**Sanitary Sewer Hookup:** Providing sanitary sewer hookups for residences that have failing septic systems, and in situations when inside floor drains are inappropriately connected to the storm drain system.

**Scheduling:** Sequencing a construction project to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

**School-Age Educational Programs:** School curricula on watershed protection, including nonpoint pollution control, developed for elementary and secondary school education programs.

**Sediment Basins:** Basins constructed to collect and store debris or sediment.

**Sediment Basin/Rock Dam:** An earthen or rock embankment located to capture sediment from runoff and retain it on the

construction site, for use where other on-site erosion control practices are not adequate to prevent off-site sedimentation. Sediment basins are more permanent in nature than sediment traps, and can be designed as permanent features of a development. Basins are most commonly used at the outlets of diversions, channels, slope drains, or other runoff conveyances that discharge sediment-laden water.

**Sediment Collection:** Collection of sediment using barriers such as filter fabric, straw bale fences, brush fences, and barriers constructed of gravel; and settling ponds.

**Sediment Fence (Silt Fence)/ Straw Bale Barrier:** A temporary sediment barrier designed to retain sediment from small disturbed areas by reducing the velocity of sheet flows. The barrier can consist of filter fabric buried at the bottom, stretched, and supported by posts; or straw bales staked into the ground.

**Sediment Trap:** A small, temporary ponding basin formed by an embankment or excavation to capture sediment from runoff. Traps are most commonly used at the outlets of diversions, channels, slope drains, or other runoff conveyances that discharge sediment-laden water.

**Seedbed Preparation:** Preparation of the soil surface to provide better plant growth conditions prior to seeding.

**Septic System Design and Construction:** Sizing, pretreatment, and installation practices for on-site wastewater treatment systems.

**Septic System Operation and Maintenance:** Practices for proper operation and maintenance of a septic system including water conservation to avoid hydraulic overloading, avoiding disposal of household chemicals in the system, and regular inspection and pumping.

**Serrated Slopes:** Small steps on a slope face that provides favorable sites for establishing vegetation and controlling runoff. This method is limited to soils that have medium to high cohesion properties.

**Setbacks:** Restrictions on the siting and construction of new standing structures along a shoreline.

**Sewage Facility Maintenance:** Practices to ensure that sewage pumpout facilities are used at marinas and are maintained in operational condition.

**Sewage Facility Practices:** Practices used at marinas to prevent water pollution that include the installation of pumpout, dump station, and restroom facilities where needed at new and expanding marinas to reduce the release of sewage to surface waters.

**Shoreline Stabilization:** Using vegetation or structures to stabilize and protect banks of streams, lakes, estuaries, or excavated channels against scour and erosion.

**Sills:** The purpose of a sill is to halt the upstream movement of a headcut, thus precluding the widening or deepening of the existing channel. A sill is constructed in the same manner as a drop structure.

**Siltation Berm:** A temporary impermeable berm for use on construction sites to retain runoff water on site.

**Silt Fences:** Silt fences are temporary barriers used to intercept sediment-laden runoff from small areas. They act as a strainer: silt and sand are trapped on the surface of the fence while water passes through. They may consist of woven geotextile filter fabric or straw bales.

**Site-Based Local Controls:** Natural drainage techniques that rely on the use of small-scale, distributed, microcontrol systems to replicate the natural hydrology of a site.

**Site Plan Review Procedures:** A site plan review involves review of specific development proposals for consistency with the laws and regulations of the local government of jurisdiction.

**Site Preparation Practices, Reforestation:** A silviculture activity to remove unwanted vegetation and other material, and to cultivate or prepare the soil for regeneration by seeding, planting, or from sprouts. It is accomplished mechanically using wheeled or tracked machinery, by the use of prescribed burning, or with applications of chemicals.

**Siting Criteria, Septic Systems:** Siting criteria include minimum horizontal and vertical

setback distances and criteria for soil permeability.

**Slash Filter Fence:** A sediment trap built of windrowed slash.

**Slope Drain:** A temporary pipe or lined channel used to drain the top of a slope to a stable discharge point at the bottom of a slope.

**Slope Roughening:** Slope roughening/terracing creates uneven depressions, steps, or grooves on the soil surface for establishing vegetation, reducing runoff velocity, increasing infiltration, and providing small depressions for trapping sediment.

**Sluicing:** The practice of releasing water through a sluice gate rather than through turbines in a dam. For portions of the waterway immediately below the dam, the steady release of water by sluicing provides minimum flows with the least amount of water expenditure.

**Small Turbines:** Small turbines are used to provide continuous generation of power using small flows, as opposed to operating large turbines using high flows.

**Snow Removal/De-icing:** Snow/ice removal consists of plowing snow and ice from bridges, roadways, and shoulders. Sanding activities put sand on road and bridge surfaces to provide for safer driving surfaces. Anti-icers are applied to prevent water from bonding to the pavement.

**Sodding:** Providing permanent stabilization of exposed areas by laying a continuous cover of grass sod. Sod is useful for providing immediate cover in steep critical areas and in areas unsuitable for seed, such as flow ways and around inlets.

**Soil and Crop Water Use Data:** Soils information used to determine the available water-holding capacity of the soil along with the amount of water that the plant can extract from the soil before additional irrigation is needed.

**Soil Protection, Timber Harvesting:** Selection of the logging method and type of equipment adapted to the given slope, landscape, and soil properties in order to minimize soil erosion.

**Soil Stabilization:** The proper placing, grading, and /or covering of soil, rock, or earth to ensure its resistance to erosion, sliding, or other movement.

**Solid Waste Practices:** Practices to prevent or reduce the discharge of pollutants to the environment from solid or construction waste by providing designated waste collection areas and containers, arranging for regular disposal, and training employees and subcontractors.

**Source Controls:** Management practices or structural practices that work at the source to prevent sediment or pollutants from entering storm water runoff.

**Spill Contingency Plan:** A plan to prevent or reduce the discharge of pollutants to the environment from leaks and spills.

**Spill Prevention and Control:** Preventing or reducing the discharge of pollutants to storm water from accidental spills by preventing spills and leaks, quickly responding to control the spill, and conducting appropriate and thorough cleanups.

**Spoil Spreading:** Disposing of surplus excavated materials by placing it in surface depressions; by shaping; by spreading it over the surface of adjacent lands along the ditch, canal, or other excavations from which the spoil was removed; or by placing it on other specified areas.

**Spring Development:** Improving springs and seeps by excavating, cleaning, capping, or providing collection and storage facilities.

**Staging and Materials Site Management:** Locating, constructing and maintaining staging and storage areas within or adjacent to construction sites so that no contaminated storm water or wind erosion (dust) is discharged from the site.

**Stock Trails and Walkways:** Travel facilities for livestock and/or wildlife to provide movement through difficult or ecologically sensitive terrain to provide or improve access to forage, water and/or shelter; improve grazing efficiency and distribution, or divert travel away from ecologically sensitive and/or erosive sites.

**Storm Drain Inspection and Maintenance:** The inspection and maintenance (including repair, replacement, and clearing of pipes, culverts, underdrains, horizontal drains, and other elements) of storm water drainage systems. This also includes the cleanout of inlets, catch basins, and manholes using a vacuum truck and the removal of silt, debris, and overgrown vegetation to maintain the flood control capacity of drainage ditches.

**Storm Drain Stenciling:** Marking storm drains using stenciling to reduce illegal dumping of litter, leaves, and toxic substances down urban runoff drainage systems. These programs serve as educational reminders to the public that such storm drains often discharge untreated runoff directly to rivers or lakes.

**Storm Drain System Operation and Maintenance:** Proper operation and maintenance of structural treatment facilities is critical to their effectiveness in mitigating adverse impacts of urban runoff.

**Storm Water Controls:** Source controls and structural facilities used to control storm water runoff. Structural facilities include sand filters, ponds, wetlands, infiltration basins and trenches, chemical and filtration treatment systems, vegetated filter strips and grassed swales, porous pavement, oil-grit separators, catch basins, absorbents in drain inlets, holding tanks and swirl concentrators. Source controls are management practices or structural practices that work at the source to prevent sediment or pollutants from entering storm water runoff.

**Storm Water System Retrofitting:** The creation or modification of an urban runoff management system in a previously developed area. This may include using wet ponds, infiltration systems, wetland plantings, streambank stabilization, and other techniques for improving water quality and creating aquatic habitat. A retrofit can consist of the construction of a new practice in a developed area, the enhancement of an older urban runoff management structure, or a combination of improvement and new construction.

**Straw Bale Barrier:** A series of secured anchored straw bales paced end to end along a level contour in a shallow trench to intercept sediment-laden runoff from small drainage areas of disturbed soil.

**Streambank Protection:** Streambank protection may involve the use of several techniques and materials. Management practices for the prevention of streambank failures include protection of existing vegetation along streambanks; regulation of irrigation near streambanks and rerouting of overbank drainage; and minimization of loads on top of streambanks (such as prevention of building within a defined distance from the streambed).

**Streambank Stabilization:** Techniques for controlling erosion including wetland creation and vegetative bank stabilization.

**Streambank/Shoreline Stabilization, Structural:** Structural shore or streambank erosion control methods such as returns or

return walls, toe protection, and proper maintenance or total replacements.

**Stream Channel Stabilization:** Stabilizing the channel of a stream with suitable structures to control aggradation or degradation in a stream channel. This does not include work done to prevent bank cutting or meandering.

**Stream Crossings:** A temporary stream crossing (a bridge or culvert) provides a means for construction vehicles to cross streams or watercourses without damaging the streambed or channel, and protects the streambank from further degradation and sediment loss. In some circumstances fords may result in less disturbance to streams and fisheries than installing culverts.

**Stream Habitat Improvement and Management:** Strategies to maintain, improve, or restore physical, chemical and biological functions of a stream.

**Streamside Management Areas:** Streamside areas with a minimum width of 30-50 feet where soil disturbance and chemical use is minimized; and landings, roads, mechanical site preparation, and tree harvesting are restricted.

**Street Sweeping and Vacuuming:** Pavement cleaning practices using street sweeping on a regular basis to minimize pollutant export to receiving waters. These cleaning practices are designed to remove sediment, debris, and other pollutants that are a potential source of pollution.

**Stripcropping, Contour:** Growing crops in a systematic arrangement of strips or bands across the general slope to reduce water erosion. The crops are arranged so that a strip of grass or a close-growing crop is alternated with a clean-tilled crop or fallow.

**Stripcropping, Field:** Growing crops in a systematic arrangement of strips or bands across the general slope (not on the contour) to reduce water erosion. The crops are arranged so that a strip of grass or a close-growing crop is alternated with a clean-tilled crop or fallow.

**Structural Treatment Practices, Storm Water:** Structures used to control runoff or temporarily store storm water on site. A number of structural devices have been developed to encourage filtration, infiltration, or setting of suspended particles.

**Structure for Water Control:** A structure in an irrigation, drainage, or other water management system that conveys water, controls the direction or rate of flow, or maintains a desired water surface elevation.

**Subdivision Growth Controls:** Subdivision regulations that govern the process by which individual lots of land are created out of larger tracts. Subdivision regulations are intended to ensure that subdivisions are appropriately related to their surroundings. The primary purpose is to control division of land into lots suitable for building. This measure can protect drinking water supplies from septic system effluent and storm water runoff.

**Subsurface Drain:** A conduit, such as corrugated plastic tile or pipe, installed beneath the ground surface to collect and/or convey drainage water.

**Surface Drainage, Field Ditch:** A graded ditch for collecting excess water in a field.

**Subsurface Drainage, Main or Lateral:** An open drainage ditch constructed to a designed size and grade for disposal of surface and subsurface drainage water primarily collected by drainage field ditches and subsurface drains.

**Surface Roughening:** Roughening a bare, sloped soil surface with horizontal grooves or benches running across the slope. Grooves can be large-scale, such as stair-step grading with small benches or terraces, or small-scale, such as grooving with disks, tillers, or other machinery. Heavy tracked machinery which should be reserved for sandy, non-compressible soils.

**Swirl Concentrator:** A swirl concentrator is a small, compact solids separation device with no moving parts. During wet weather the unit's outflow is throttled, causing the unit to fill and to self-induce a swirling vortex. Secondary flow currents rapidly separate first flush settleable grit and floatable matter.

**Temporary Block and Gravel Inlet Protection:** A temporary sediment control barrier formed around a storm drain inlet by the use of standard concrete block and gravel to filter sediment from storm water entering the inlet prior to stabilization of the

contributing area soils, while allowing use of the inlet for storm water conveyance.

**Temporary Excavated Drop Inlet Protection:**

A temporary excavated area around a storm drain drop inlet or curb inlet designed to trap sediment prior to discharge into the inlet.

**Temporary Fabric Drop Inlet Protection:**

A temporary fabric barrier placed around a drop inlet to help prevent sediment from entering storm drains during construction operations, while allowing use of the inlet for storm water conveyance.

**Temporary Gravel Construction Access:**

A graveled area or pad located at points where vehicles enter and leave a construction site. This practice provides a buffer area where vehicles can drop their mud and sediment to avoid transporting it onto public roads, to control erosion from surface runoff, and to help control dust.

**Temporary and Permanent Seeding:**

Temporary seeding involves planting rapid-growing annual grasses, small grains, or legumes to provide initial, temporary stabilization to minimize runoff, erosion, and sediment yield on disturbed soils that will not be brought to final grade for more than approximately one month. Fertilizing and surface roughening facilitate seeding.

**Temporary Roads/Entrances:** Implementing practices to control erosion and sedimentation originating from haul roads, detours, access roads (paved/unpaved), construction

entrances/exits, and access roads to sensitive areas associated with a construction project.

**Temporary Slope Drain:** Flexible tubing or conduit extending temporarily from the top to the bottom of a cut or fill slope for the purpose of conveying concentrated runoff down the slope face without causing erosion.

**Temporary Sod Drop Inlet Protection:**

A permanent grass sod sediment filter area around a storm drain drop inlet for use once the contributing area soils are stabilized.

**Temporary Stream Crossing:** A bridge, ford, or temporary structure installed across a stream or water course for short-term use by construction vehicles or heavy equipment, intended to keep sediment out of the stream and avoid damage to the streambed.

**Terrace:** An earthen embankment, channel, or combination ridge and channel constructed across a slope.

**Timing of Construction and Control**

**Applications:** The sequence of construction activities and erosion control application to minimize erosion created by construction disturbance.

**Toe Protection:** Toe protection usually takes the form of a stone apron installed at the base of the vertical structure to reduce wave reflection and scour of bottom sediments during storms.

**Topsoiling:** Preserving and subsequently using the upper, biologically active layer of soil to enhance final site stabilization with vegetation.

**Tree/Shrub Establishment:** Establishing woody plants by planting seedlings or cuttings, direct seeding, or natural regeneration.

**Turbine Pulsing:** A practice involving the release of water through the turbines at regular intervals to improve minimum flows.

**Turbine Venting:** The practice of injecting air into water as it passes through a turbine.

**Underground Outlet:** A conduit installed beneath the surface of the ground to collect excess surface water from terraces, diversions, subsurface drains, surface drains, trickle tubes, or other areas which concentrate surface water, and convey it to a suitable outlet to dispose of without causing damage by erosion or flooding.

**Upland Wildlife Habitat Management:**

Creating, restoring, maintaining or enhancing areas for food, cover, and water for upland wildlife and species that use upland habitat for a portion of their life cycle.

**Urban Forestry:** Increasing the urban forest through tree-planting programs. Planting trees where none exist reduces runoff through interception of precipitation, moderates urban climate, improves air quality, and reduces noise. Trees and other vegetation can be incorporated into community open space,

street rights-of-way, parking lot islands, and other landscaped areas.

**Use Exclusion:** Excluding animals, people, or vehicles from an area by preventing, restricting, or controlling access to the area to maintain or improve the quantity and quality of natural resources or minimize liability and human health concerns.

**Vegetated Filter Strip (VFS):** A low-gradient vegetated area that filters solids from overland sheet flow. A VFS can be natural or planted; should have relatively flat slopes; and should be vegetated with dense-culmed, herbaceous, erosion-resistant plant species.

**Vegetation Control:** Vegetation maintenance compatible with environment, aesthetics, erosion, and dust control through chemical weed control, mechanical weed control, tree and shrub pruning, and tree and shrub removal.

**Vegetation/Seeding:** The process of growing, from seed, a vegetative cover on disturbed areas to control erosion during construction and to stabilize slopes and surface areas.

**Vegetative Practices:** Use of vegetation to filter contaminants or promote infiltration of wastewater. Practices include using constructed wetlands, vegetated buffer strips, grassed swales, or depressions that collect runoff.

**Vegetation/Planting:** Permanent vegetation/planting through the process of using live plants, plant parts, roots, or cut sod for long-

term or permanent vegetative cover on disturbed areas or areas that need additional assistance for soil/slope stabilization and erosion control.

**Vehicle and Equipment Fueling Practices:** Practices to prevent fuel spills and leaks through facility design, spill control, and designated fueling areas.

**Vehicle and Equipment Maintenance Practices:** Practices that prevent or reduce the discharge of pollutants to the environment from vehicle and equipment maintenance and repair by running a dry shop.

**Waste Handling and Disposal:** Preventing or reducing the discharge of pollutants to storm water from waste handling and disposal by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff from waste management areas.

**Waste Management System:** A planned system in which all necessary components are installed for managing liquid and solid waste, including runoff from concentrated waste areas, in a manner that does not degrade air, soil, or water resources.

**Waste Materials Treatment, Timber:** The practice of placing all debris, overburden, and other waste materials associated with harvesting in such a manner as to prevent their entry by erosion, high water, or other means into streams.

**Waste Storage Pond:** A waste storage impoundment made by constructing an embankment and/or excavating a pit or dugout, or by fabricating a structure to temporarily store wastes such as manure, wastewater, and contaminated runoff as a storage function component of an agricultural waste management system.

**Waste Storage Facility:** A fabricated structure for temporary storage of animal wastes or other organic agricultural wastes.

**Waste Treatment Lagoon:** An impoundment made by excavation or earth fill for biological treatment of animal or other agricultural wastes.

**Waste Utilization:** Using agricultural wastes or other wastes on land in an environmentally acceptable manner while maintaining or improving soil and plant resources.

**Waterbar:** A berm constructed across a roadway to divert storm runoff away from unpaved surfaces or other disturbed areas.

**Water Harvesting Catchment:** A facility for collecting and storing precipitation created by sealing a portion of a watershed or contributing areas to increase, collect, and store runoff water for future use. This also includes simple curbs and diversions constructed to collect and store runoff from such high runoff areas as rock outcrops or existing paved or impervious areas.

**Water and Sediment Control Basin:** An earthen embankment or a combination ridge

and channel generally constructed across a slope and minor watercourse to form a sediment trap and water detention basin.

**Watering Facility:** A device (tank, trough, or other watertight container) for providing animal access to water.

**Water-Measuring Device:** An irrigation water meter, flume, weir, or other device installed in a pipeline or ditch to measure water flow.

**Water Quality Assessment:** An assessment of water quality as part of marina siting and design.

**Water Well:** A hole drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer to provide water for livestock, wildlife, irrigation, human, and other uses.

**Watershed Practices:** Management of pollution sources from a watershed. Practices for watershed management include land use planning, erosion control, ground water protection, mine reclamation, pollutant screening and identification, animal waste control, and failing septic tank control.

**Water Table Control:** Controlling the water table through proper use of subsurface drains, water control structures, and water conveyance facilities for the efficient removal of water or runoff.

**Well Decommissioning:** The sealing and permanent closure of a water well no longer in use.

**Wetland and Riparian Zone Protection:** The protection and restoration of wetlands and riparian areas, wherever possible. Replanting the banks and floodplains of a stream with native species to stabilize erodible soils and improve surface water and ground water quality can also restore riparian forests.

**Wetland Development or Restoration:** The construction or restoration of a wetland facility to provide the hydrological and biological benefits of a wetland for wildlife, to reduce flooding, provide offsite water quality benefits, and provide ground water recharge of acceptable water quality.

**Wetland Restoration:** A rehabilitation of a drained or degraded wetland where the soils, hydrology, vegetative community, and biological habitat are returned to the natural condition to the extent practicable.

**Wetland Wildlife Habitat Management:** Retaining, developing, or managing habitat for wetland wildlife.

**Wet Pond:** A basin designed to maintain a permanent pool of water and temporary storage capacity for storm water runoff. The permanent pool enhances pollutant removal by promoting the settling of particulates, chemical coagulation and precipitation, and biological uptake of pollutants. It is normally 0.5 to 1 inch in depth per impervious acre.

**Wildfire Practices:** Practices used when combating wildfires to reduce impacts to watercourses. These practices include avoiding the use of fire-retardant chemicals in stream-

side areas and over watercourses and preventing runoff into watercourses. Application equipment should not be cleaned in watercourses or locations that drain into watercourses. Fire suppression components such as firelines, staging areas, helispots and camps should be properly located, designed and closed. Advance planning and training for firefighters to consider water quality impacts when fighting wildfires should be provided.

**Winter Harvesting Practices, Timber:** Drainage and maintenance practices that address the risk of erosion and damage from winter logging operations. When properly sited and conducted, winter harvesting can result in less soil disturbance.

**Winter Operation Practices, Forest Roads:** Drainage and maintenance practices that address the risk of erosion and damage from roads and skid trails from winter logging operations.

**Zoning:** The division of a municipality or county into districts for the purpose of regulating land use. Communities traditionally use zoning to separate potentially conflicting land uses from one another.

## APPENDIX B

# Additional Information

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### AGRICULTURE

Idaho Department of Agriculture, Agricultural Water Quality Program, web site at <http://www.agri.state.id.us/gw/WaResTOC.htm>.

*Idaho One Plan*, a catalog of best management practices retrieved at <http://www.oneplan.org>.

U. S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), *Comprehensive Nutrient Management Planning – Technical Guidance*, retrieved at <http://www.nrcs.usda.gov/technical/nutrient.html>.

USDA NRCS *National Handbook of Conservation Practices*, retrieved at [http://www.ftw.nrcs.usda.gov/nhcp\\_2.html](http://www.ftw.nrcs.usda.gov/nhcp_2.html).

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### SILVICULTURE

USEPA Office of Water, *National Management Practices to Control Polluted Runoff from Forestry* retrieved at <http://www.epa.gov/owow/nps/forestrygmt>.

USEPA, *Management Practices for Forestry* retrieved at <http://www.epa.gov/owow/nps/MMGI/Chapter3/index.html>.

Idaho Department of Lands (IDL), Forester Forums accessed at [http://www.deq.state.id.us/lands/Bureau/ForestAssist/state\\_forester\\_forum.htm](http://www.deq.state.id.us/lands/Bureau/ForestAssist/state_forester_forum.htm).

IDL, *Idaho Administrative Code, Rules Pertaining to the Idaho Forest Practices Act*, retrieved at <http://www3.state.id.us/idstat/TOC/idstTOC.html>.

Seyedbagheri, Kathleen A. 1992. *Forest Practices BMP Effectiveness*. UDDA Forest Service Intermountain Research Station, for the Idaho Department of Health and Welfare, Division of Environmental Quality (Collection Agreement INT-9084-CA).

USDA Forest Service, Regions 1 and 4. 1988. *Soil and Water Conservation Practices Handbook*. Forest Service Handbook 2509.22.

## **HYDROLOGIC MODIFICATION**

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USEPA, *National Management Practices to Protect and Restore Wetlands and Riparian Areas for the Abatement of Nonpoint Sources Pollution* retrieved at <http://www.epa.gov/owow/nps/wetpractices/>.

Idaho Department of Water Resources, *Idaho Administrative Code, Rules and Minimum Standards for Stream Channel Alterations* retrieved at <http://www.deq.state.id.us/adm/adminrules/rules/idapa37/0307.pdf>.

## **MINING**

IDL, *Best Management Practices for Mining in Idaho*.

IDL, *Idaho Administrative Code, Rules Governing Exploration and Surface Mining Operations in Idaho* retrieved at <http://www.deq.state.id.us/adm/adminrules/rules/idapa20/0302.pdf>.

IDL, *Idaho Administrative Code, Rules Governing Placer and Dredge Mining Operations in Idaho* retrieved at <http://www.deq.state.id.us/adm/adminrules/rules/idapa20/0301.pdf>.

Norman, David K., P. Wampler, A. Throop, E. Schmitzer and J. Roloff, 1997. *Best Management Practices for Reclaiming Surface Mines in Oregon and Washington* at <http://www.wa.gov/dnr/htdocs/ger/pdf/bmp.pdf>.

Pennsylvania State University, *WATERSHEDS, A Decision Support System for Nonpoint Source Pollution Control* retrieved at <http://h2osparc.wq.ncsu.edu/>.

## **URBAN ACTIVITIES/STORM WATER RUNOFF**

Department of Environmental Quality 2001, *Catalog of Stormwater BMPs for Idaho Cities and Counties*.

Department of Environmental Quality 1997, *Environmental Planning Tools and Techniques*, retrieved at [http://www.deq.state.id.us/water/gw/env\\_planning\\_tools\\_report.htm](http://www.deq.state.id.us/water/gw/env_planning_tools_report.htm).

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USEPA, Urban nonpoint source control information retrieved at <http://www.epa.gov/owow/nps/urban.html>.

Stormwater Center at <http://www.stormwatercenter.net>.

## **ON-SITE DISPOSAL SYSTEMS**

National Small Flows Clearinghouse, An excellent reference for the most complete and current information on management options for septic systems at [http://www.nesc.wvu.edu/nsfc/nsfc\\_index.htm](http://www.nesc.wvu.edu/nsfc/nsfc_index.htm).

DEQ, *A Homeowner's Guide to Septic Systems* retrieved at [http://www.deq.state.id.us/deq/water/gw/septicsystem\\_brochure.htm](http://www.deq.state.id.us/deq/water/gw/septicsystem_brochure.htm) .

University of Idaho, College of Agriculture, Cooperative Extension System, *Care and Maintenance of Your Home Septic System* retrieved at <http://info.ag.uidaho.edu/Resources/PDFs/CIS1027.pdf>.

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## **TRANSPORTATION**

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Washington State Department of Transportation, *Highway Runoff Manual* retrieved at [http://www.wsdot.wa.gov/eesc/environmental/programs/hazwqec/wqec\\_docs.htm](http://www.wsdot.wa.gov/eesc/environmental/programs/hazwqec/wqec_docs.htm).

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## **MARINAS AND RECREATIONAL BOATING**

USEPA, *National Management Practices to Control Nonpoint Source Pollution from Marinas and Recreational Boating*, retrieved at <http://www.epa.gov/owow/nps/mmsp/index.html>.



APPENDIX C

## Contact Information

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208-338-5900

Idaho Cooperative Extension Service  
University of Idaho College of Agriculture  
Agricultural Publications  
University of Idaho  
Moscow, Idaho 83844-2240  
208-885-7982

Idaho Department of Agriculture  
Agricultural Water Quality Program  
P.O. Box 790  
Boise, Idaho 83701-0790  
208-332-8500

Department of Environmental Quality  
1410 N. Hilton Street  
Boise, ID 83706  
208-373-0502

Idaho Department of Lands  
Bureau of Forestry Assistance  
3780 Industrial Ave.  
Coeur d'Alene, ID 83815  
208-769-1525

Idaho Department of Lands  
Bureau of Minerals  
954 West Jefferson  
Boise, Idaho 83720-0050  
208-334-0247

Idaho Department of Water Resources  
1301 N. Orchard Street  
Boise, ID 83706  
208-327-7900

Idaho Soil Conservation Commission  
P.O. Box 790  
Boise, Idaho 83701-0790  
208-332-8650

Idaho Transportation Department  
3311 W. State St.  
P.O. Box 7129  
Boise, Idaho 83707-1129  
208-334-8484

National Small Flows Clearinghouse  
West Virginia University  
P.O. Box 6064  
Morgantown, WV 26506-6064.  
800-624-8301

U.S. Department of Agriculture  
Natural Resources Conservation Service  
9173 West Barnes Drive, Suite C  
Boise, Idaho 83709-1574  
208-378-5700

U.S. Department of Agriculture  
Forest Service – Northern Region  
200 East Broadway Ave.  
Missoula, MT 59807  
406-329-3511

U.S. Department of Agriculture  
Forest Service – Intermountain Region  
325 25th Street  
Ogden, UT 84401  
801-625-5306

U.S. Environmental Protection Agency  
National Headquarters – EPA Publications  
1-800-490-9198

Environmental Protection Agency  
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1200 Sixth Avenue  
Seattle, WA 98101  
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Washington State Department of Transportation  
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